

Application Serial No. 10/697587
Office Action dated March 23, 2005
Examiner: K.M. Picardat
Art Unit: 2822

REMARKS

Reconsideration and reexamination are respectfully requested in view of the above amendments and following remarks. Claims 1-7, 10-11, and 17-18 are editorially amended. Claims 1, 2, 6, and 7 are amended to remove the symbol "□" and properly recite a temperature range claimed in "°C," and is supported throughout Applicants' disclosure. Claims 20-22 are added, and are supported, for instance at Examples 5, 6, and 9 of Applicants' disclosure. No new matter has been added. Claims 1-22 are pending.

Claims 1-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite.

Claims 1, 2, 6, and 7 are amended to properly recite the respective claimed temperature ranges in degrees Celsius "°C." Thus, the incorrect symbol "□" has been deleted. The revision is supported throughout Applicants' disclosure, for instance at page 8, lines 7-14 and page 9, lines 16-21. Therefore, Applicants respectfully submit that the claims are definite.

Withdrawal of the rejection is respectfully requested.

Claims 15, 16, and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Dobson et al. (U.S. Patent No. 5,906,670).

Claim 15 recites a polymer thin film formed by the method of claim 1 and including metal oxide quantum dots that are dispersed. Claim 16 recites an electronic device including the polymer thin film of claim 15. Claim 19 recites a polymer thin film formed by the method of claim 2 and including metal oxide quantum dots that are dispersed. Claims 15, 16, and 19 recite a polymer thin film or an electronic device containing a polymer thin film, whereby metal oxide quantum dots are formed by subjecting a resultant substrate to stepwisely elevated heating. (Method of claims 1 and 2.) The process required by claims 15, 16, and 19 imparts distinctive structural characteristics to the final product, namely where a polymer thin film or an electronic

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device containing the same includes dispersed quantum dots with improved size uniformity and constant density. (Examples 5, 6, and 9.)

Dobson et al., however, does not disclose the features of claims 15, 16, and 19. Dobson et al. produces quantum dots for a polymer film by varying the concentration of its chemically combined metal in the starting solution and by varying the size of the formed droplets from the solution. (Col. 3, lines 12-21, Abstract.) In fact, Dobson et al. does not disclose dispersed metal oxide quantum dots formed by the process of changing heating conditions, as required in the products of claims 15, 16, and 19. Accordingly, as Dobson et al. does not disclose producing quantum dots by such a process, Dobson cannot lead to the products of claims 15, 16, and 19, namely the polymer thin film or the electronic device including the polymer thin film. Thus, claims 15, 16, and 19 are not anticipated by Dobson et al.

Furthermore, Dobson et al. does not disclose dispersed metal oxide quantum dots that are uniform in size and distribution. In the enclosed electron micrographs, Figures 1 and 3 respectively illustrate copper (Cu) oxide nanoparticles in polyimide formed by the method of the claimed invention (Figure 1), where the change in size and density of the Cu oxide nanoparticles is demonstrated in accordance with control of a heating period. The claimed invention provides dispersed metal oxide quantum dots with very uniform and dense particles. Figure 2, however, demonstrates electron micrographs of particles formed by the process of Dobson et al. and published by Dobson et al. In contrast to the claimed invention, the method of Dobson et al. produces particles with irregular size and distribution. Thus, the products recited by the claimed invention can expect distinct structural characteristics from its manufacturing process over the process of Dobson et al., and namely for dispersed metal oxide quantum dots.

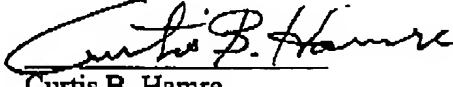
Application Serial No. 10/697587
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For at least the foregoing reasons, Applicants respectfully submit that claims 15, 16, and 19 are allowable over Dobson et al.

Favorable reconsideration and withdrawal of the rejection are respectfully requested.

With the above amendments and remarks, Applicants believe that the claims are in a condition for allowance. Favorable reconsideration is respectfully requested in the form of a Notice of Allowance. If any further questions arise, the Examiner is invited to contact Applicants' representative at the number listed below.

Respectfully Submitted,

Dated: July, 25, 2005 
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